United Nations International Seminar
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Beyond the 2010 Round
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SESSION 7: Use of modern technologies for censuses

USE SMS-GATEWAY DURING ENUMERATION FOR MONITORING FIELD OPERATION AND MONITORING QUALITY IN INDONESIA 2010 POPULATION CENSUS

Prepared by

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Use SMS-Gateway During Enumeration for Monitoring Field Operation and Monitoring Quality in Indonesia 2010 Population Census

Presented by: Thoman Pardosi (Statistics Indonesia)

1. During 2010 Indonesia population census we use SMS-Gateway technology to monitor 2 kind of activities of the census operation. The first monitoring is to check the progress of listing activities.The second monitoring is to check the quality of the data such as the individual long form questionnaire and the procedure of data collection. We named the first monitoring as listing monitoring and the second monitoring is quality monitoring.

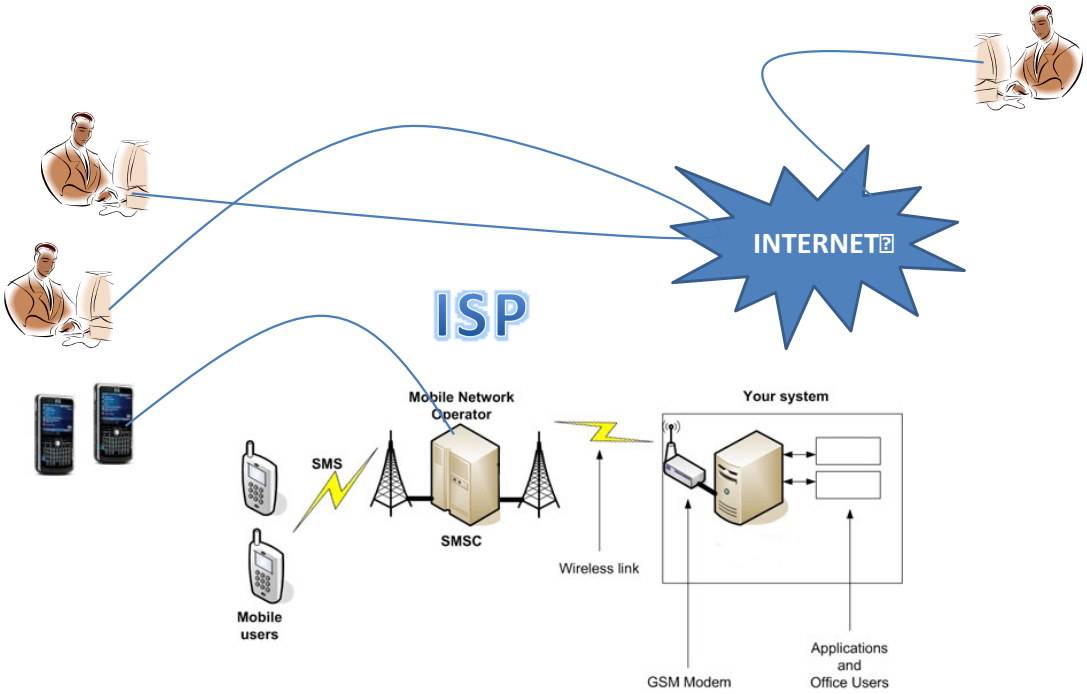
2. The process of listing monitoring:
    a. BPS Statistic Indonesia recruits 122.200 Team Enumerators, each team has one Coordinator. One Team Coordinator coordinates 2 until 4 enumerators, depends on the wide and the density of cluster. Each enumerator working in 2 or 4 clusters (in average they are working in 2 or 3 clusters).
    b. After one enumerator finish listing with one cluster the Team Coordinator will send the summary result to the call center using SMS (Short Message System). The resume encompasses cluster identity, number of male, and number of female who lives in the cluster.
    c. The call center receivesthe data and then automatically processthe data tabulation. The Table is presented in web by cluster, by village, by sub district, by district, by province, and totalnational level.
    d. Every supervisor in the line of census management, from district to national level can have an access to the website using their own username and password.
    e. The census management in the district, province and national level will be well informed the listing stage, and the supervisor can monitor the current activities of each area. The scheduling strategyis designed in 2 type:

i. In the first two weeks (1-14 May 2010) all the “listing stage” in 2 or 3 clusters will be finished. Then in the second two weeks (15-31 May 2010) the team will work on the “long form stage”. This strategy can be used in a normal condition, where a cluster not too far to other clusters.

ii. In the first 10 days (1-10 May 2010)all enumeration finished in the first cluster(listing and long form completely), and then in the second 10 days (11-20 May 2010) finished all enumeration in the second cluster, and then if any, in the third 10 days (21-30 May 2010) finished all enumeration in the third cluster. This strategyis proper for abnormal condition, where a cluster is very far to each others.

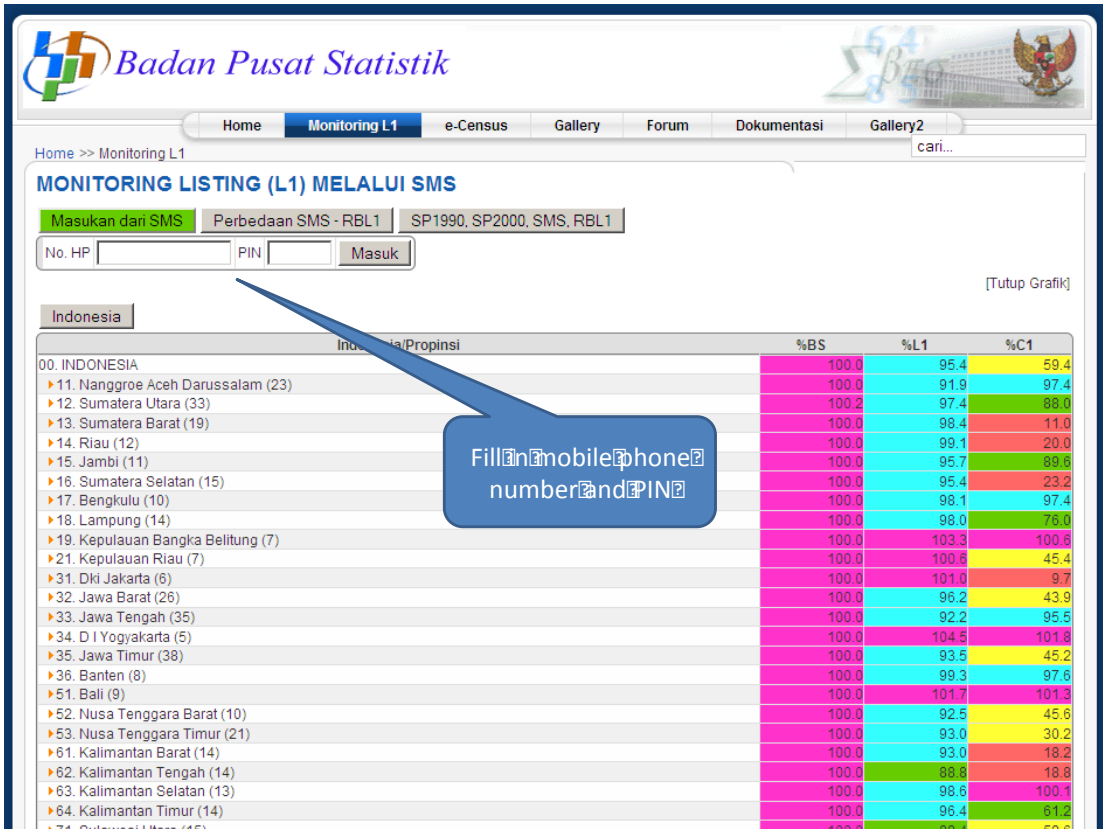
f. The time lag of result only one week after field schedule. The SMS-Gateway technologyis very helpful in controlling cluster coverage for the 2010 population census in Indonesia. Due to the limitation of SMS validity (typing error) we did not design the result to be disseminated. The other benefit of SMS Gateway technology, we can evaluate the comparation between theSMS result and the standard procedure result.

MONITORING SMS



Enumerator

SMS Gateway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MONITORING LISTING (L1) MELALUI SMS
Masukan dari SMS
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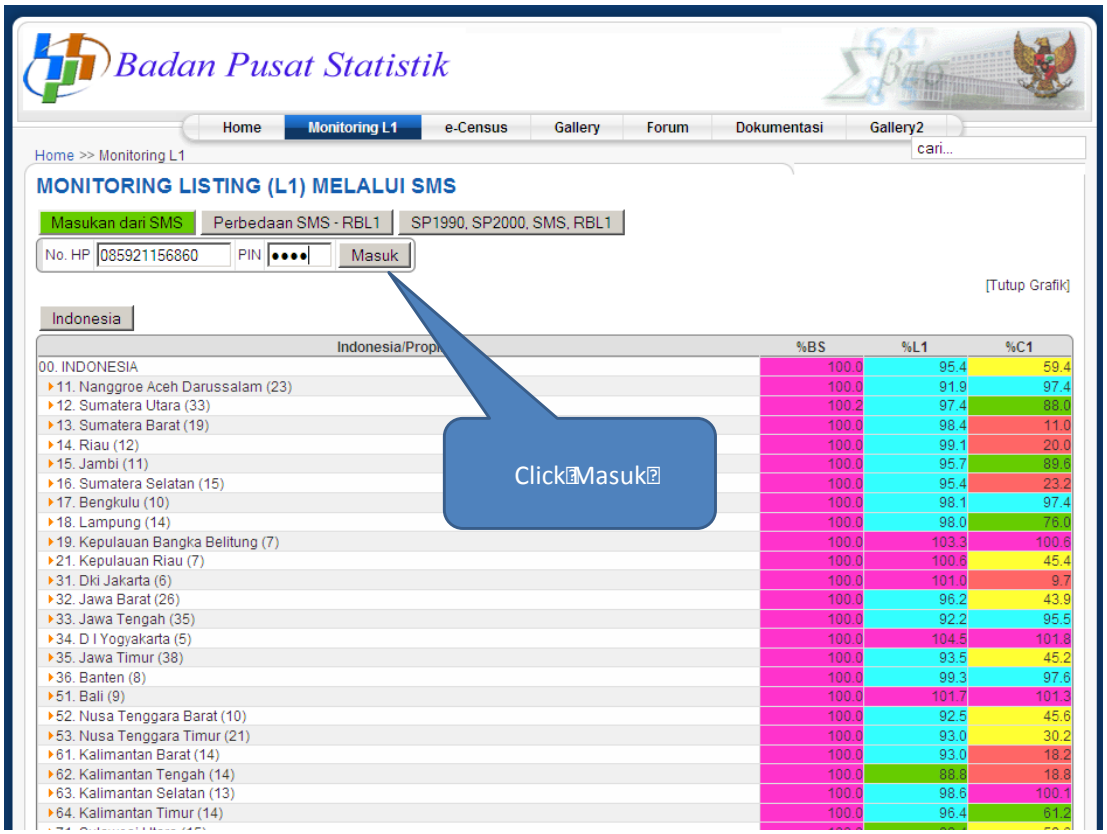
Fill in mobile phone number and PIN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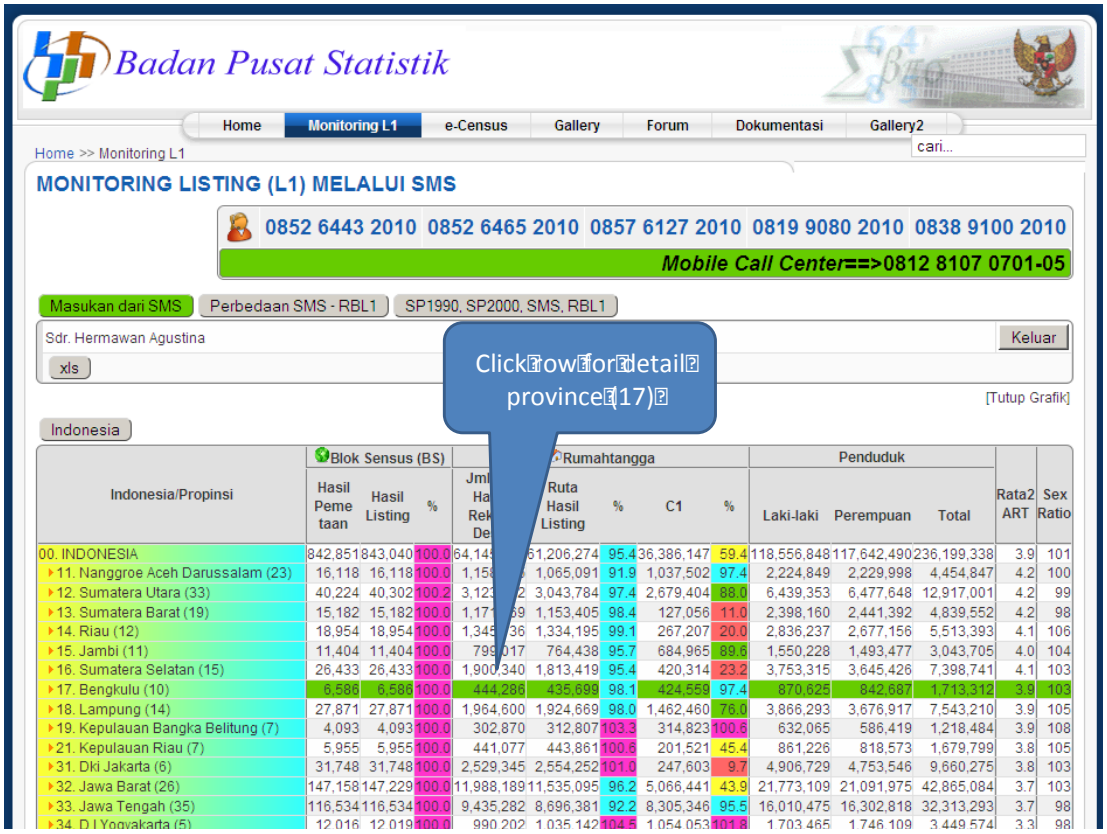
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MONITORING LISTING (L1) MELALUI SMS
0852 6443 2010 0852 6465 2010 0857 6127 2010 0819 9080 2010 0838 9100 2010
Mobile Call Center==>0812 8107 0701-05
Masukan dari SMS
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Sdr. Hermawan Agustina
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[Tutup Grafik]
Indonesia
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Blok Sensus (BS)
Hasil Pemetaan
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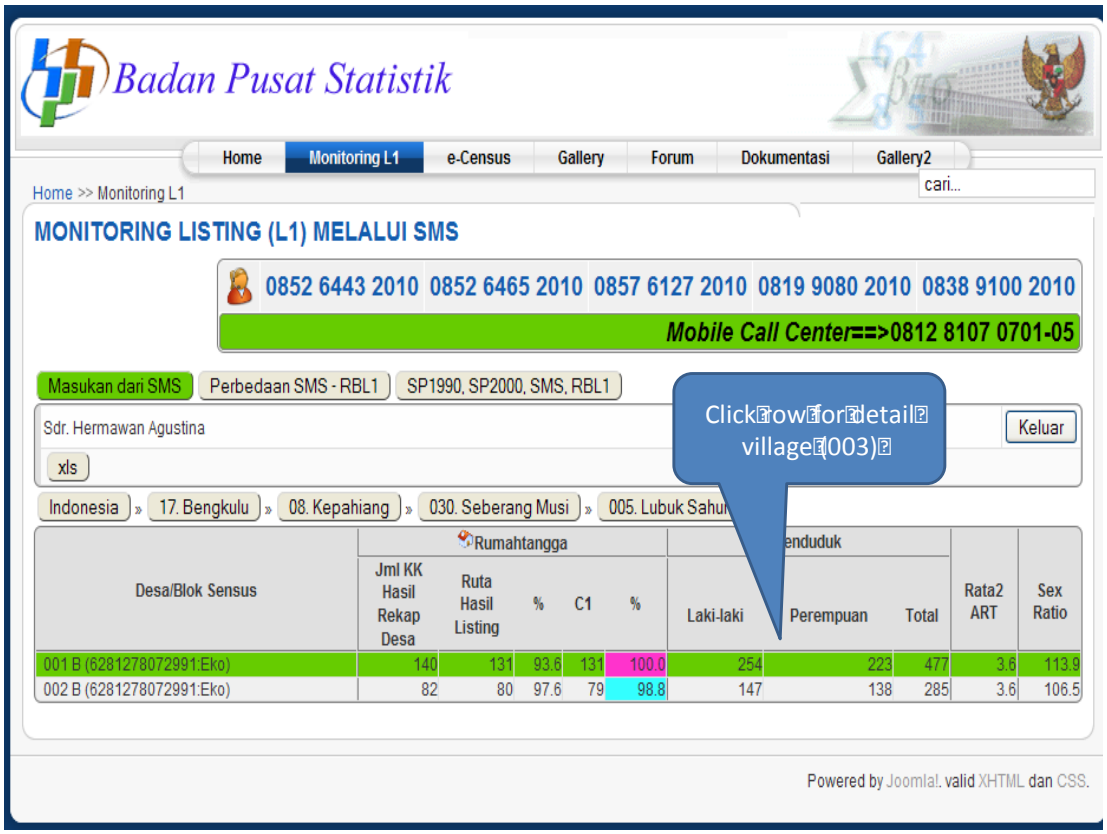
11. Nanggroe Aceh Darussalam (23) 16,118 16,118 100.0 1,065,091 91.9 1,037,502 97.4 2,224,849 2,229,998 4,454,847 4.2 100
12. Sumatera Utara (33) 40,224 40,302 100.2 3,043,784 97.4 2,679,404 88.0 6,439,353 6,477,648 12,917,001 4.2 99
13. Sumatera Barat (19) 15,182 15,182 100.0 1,153,405 98.4 127,056 11.0 2,398,160 2,441,392 4,839,552 4.2 98
14. Riau (12) 18,954 18,954 100.0 1,334,195 99.1 267,207 20.0 2,836,237 2,677,156 5,513,393 4.1 106
15. Jambi (11) 11,404 11,404 100.0 764,438 95.7 684,965 89.6 1,550,228 1,493,477 3,043,705 4.0 104
16. Sumatera Selatan (15) 26,433 26,433 100.0 1,813,419 95.4 420,314 23.2 3,753,315 3,645,426 7,398,741 4.1 103
17. Bengkulu (10) 6,586 6,586 100.0 444,286 435,699 98.1 424,559 97.4 870,625 842,687 1,713,312 3.9 103
18. Lampung (14) 27,871 27,871 100.0 1,964,600 1,924,669 98.0 1,462,460 76.0 3,866,293 3,676,917 7,543,210 3.9 105
19. Kepulauan Bangka Belitung (7) 4,093 4,093 100.0 302,870 312,807 103.3 314,823 100.6 632,065 586,419 1,218,484 3.9 108
21. Kepulauan Riau (7) 5,955 5,955 100.0 441,077 443,861 100.6 201,521 45.4 861,226 818,573 1,679,799 3.8 105
31. Dki Jakarta (6) 31,748 31,748 100.0 2,529,345 2,554,252 101.0 247,603 9.7 4,906,729 4,753,546 9,660,275 3.8 103
32. Jawa Barat (26) 147,158 147,229 100.0 11,988,189 11,535,095 96.2 5,066,441 43.9 21,773,109 21,091,975 42,865,084 3.7 103
33. Jawa Tengah (35) 116,534 116,534 100.0 9,435,282 8,696,381 92.2 8,305,346 95.5 16,010,475 16,302,818 32,313,293 3.7 98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0852 6443 2010 0852 6465 2010 0857 6127 2010 0819 9080 2010 0838 9100 2010
Mobile Call Center==>0812 8107 0701-05
Masukan dari SMS
Perbedaan SMS - RBL1
SP1990, SP2000, SMS, RBL1
Sdr. Hermawan Agustina
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002 B (6281278072991:Eko) 82 80 97.6 79 98.8 147 138 285 3.6 106.5
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3. Process of monitoring in data quality

    a. Data quality monitoring is needed to minimize non sampling error. To execute this monitoring we adopted UN Recommendation on quality assurance of population census. Quality assurance focused on listing, procedures, and characteristic of individual. The listing quality monitoring is to improve the coverage. The procedure monitoring is to minimize non sampling error and also improve the coverage.The monitoring of individual characteristic is to improve the validity of individual and housing data.

    b. For data quality monitoring we recruited 1676 person :136 personas coordinators and 1540 person as enumerators. About 1.200 person of enumerators were the student of Statistical Colleagues. They were trained by 50 trainers. Their 2 days training program covering all fields operation such as how to fill the forms and how to use other field instruments.

    c. They were assigned to 8.018 clusters in 7.713 selected villages (1.548 sub districts, 457 (all) districts, and 33 (all) provinces).

    d. Special for Java Island, one monitoring enumerator worked in 1 sub district and covered 6 clusters in difference villages. It was different with outside of Java Island , one monitoring enumerator worked in 1 sub district covered 4 closters in difference villages.

    e. There are 7 households in one cluster chosed randomly as respondents to check individual and housing characteristics.

    f. They checkedprocedures applied, counted number household and asked questions. The questions are apart of complete question in real questionnaire.

    g. Then they copied the answer from original questionnaires, so both of them can be compared, and then it is sent to a gateway system. They don’t need to judge the result which is wrong or right, but just send it.

h. The system will immediately create tables of differences and disseminatetables and graphics. Red color in graphics indicates highdifferences.
i. This internet monitoring is designed to help management in all levels to see the rechecked result as soon as possible. It is important forthe management level to instruct the team to correct the errors.
j. Website can be accessed by supervisor or management who are already registered. (http://kualitassp2010.bps.go.id/).

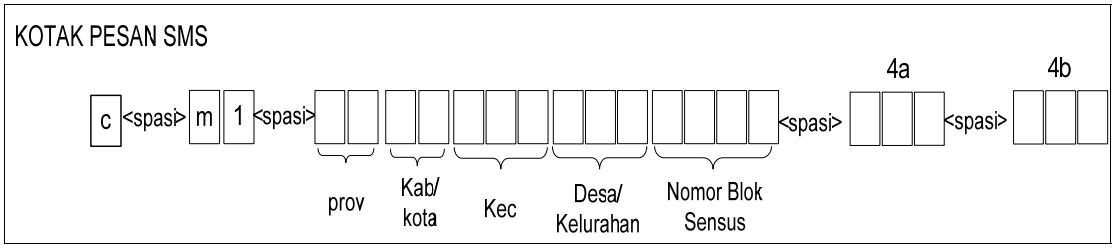
4. Monitoring quality of the data
    a. Some questions(a part of a whole questions) was asked again to respondent by other interviewer then we compare the both results.
    b. The question are:
        i. Number of member in each household (7 households per cluster)
        ii. Relation to head of household
        iii. Sex
        iv. Age
        v. School attendance
        vi. Marital status
        vii. Floor
        viii. Electricity
        ix. Water for drink
        x. Sanitation
        xi. Ownership of house

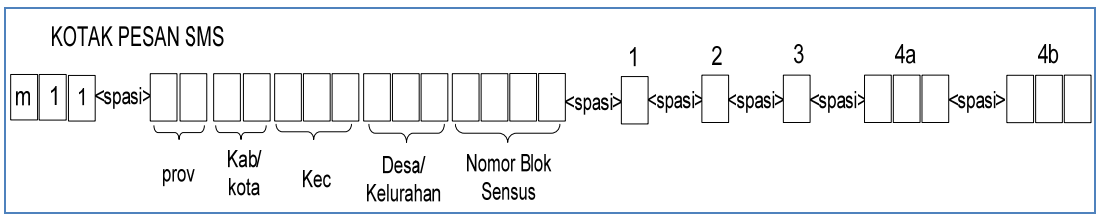
    c. The question on coverage monitoring are:
        i. Border of cluster's map is clear or not.
        ii. Is listing start from eastor west side
        iii. Is listing process done part by part of sub cluster if any
        iv. Number of census building that is no sticker and number of all census building in the cluster. If any census building without sticker, quality enumerator will check again on the next 2 weeks.
        v. Is the number of stickers match with forms (questionnaire): all, or majority (>= 75%), or not majority (<75%)
        vi. Is the crosscheck done
        vii. Is interview with long form done after finishing listing
        viii. Are you trained? If yes, for how long?
        ix. When do you scan the cluster?
        x. Before you do listing, did your team take meeting first?

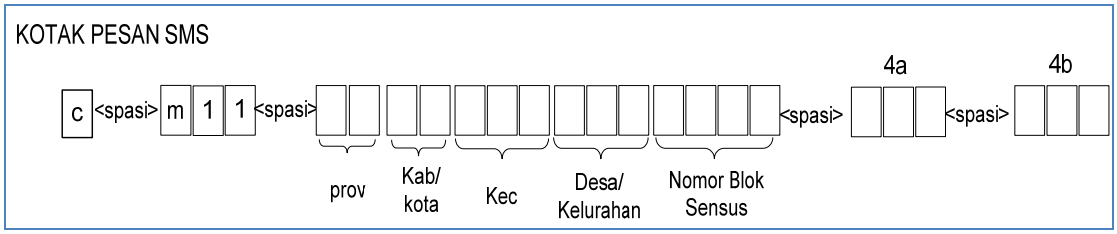
d. In term of comparisonin age there are tolerance for consistency judgment:

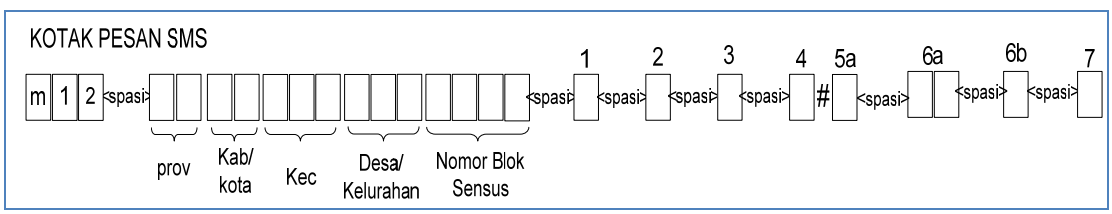
Age	Tolerances
under 15 years	± 2 years
15 – 29 years	± 4 years
30 – 44 years	± 7 years
45 – 64 years	± 10 years
65 years or up	± 15 years

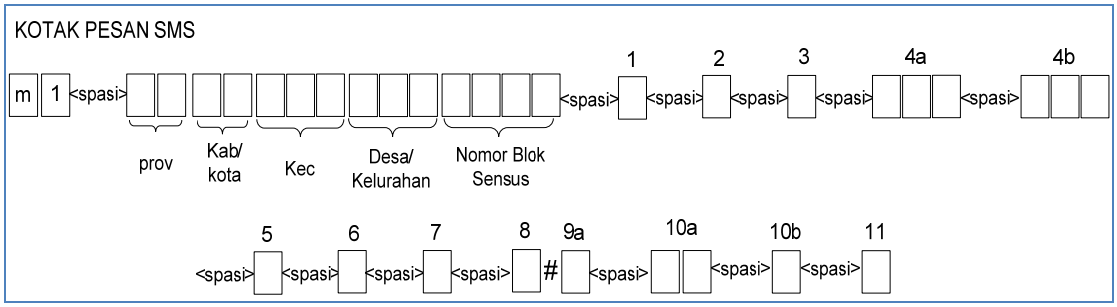
e. These are the examples format data in sms:











f. Inform to the enumerator as soon as possible to correct it.

g. The objectives of quality monitoring as general are:

   i. To maximize coverage of buildings and households, by checking the samples.

   ii. To make sure that listing applied based on the rule.

   iii. To correct content error of some characteristic on individuals and housing information.

   iv. Give speed information by *SMS-Gateway*to the officers in the district level about error indications and ask them to do checking in all clusters.

5. To give feed back quicklyto the field management regarding the indication of error coverage and error contents, BPS Statistic Indonesia prepared 2 application: (1) SMSGateway to receive data sended by sms, and (2) Website monitoring to disseminatethe result.
6. Sendingdata via smswas scheduled on day 2 to day 5 for coverage result, and day 7 to day 11 for content result.
7. Fields monitoring conducted on 3-14 May 2010. All census fields enumuration scheduled on 1-31 May 2010.
8. Quality monitoring consisted of coverage , field procedures and content error. The result directly was used as an early warning, that need to be corrected and checked to all clusters.
9. The items to be checked are: border of clusters, stickers in building, and main characteristics of individual and housing. Housing characteristics including floor, electricity, water for drinking, sanitation, and ownership of the house.

Individual characteristics including sex, relation to the head of household, age, school attending, and marriage status.

10. Other items included in monitoring are:

    - Is the original enumerator trained?
    - Did they scan cluster before listing?,
    - Did they do preparation meeting?,
    - Did they do check and recheck for listing questionnaire (L1)?,
    - Is interviewing for long form (C1) conducting after finished listing in a cluster?,
    - Are number of building match to the map and to the stickers?

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